



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 5 :		(11) International Publication Number:	WO 91/20082
G11B 31/00	A1	(43) International Publication Date:	26 December 1991 (26.12.91)

(21) International Application Number:	PCT/US91/03925	(74) Agent:	MUSKAL, James, B.; Leydig, Voit & Mayer, Two Prudential Plaza, Suite 4900, Chicago, IL 60601-6730 (US).
(22) International Filing Date:	4 June 1991 (04.06.91)		
(30) Priority data:			
538,981	15 June 1990 (15.06.90)	US	
(71) Applicant:	ARACHNID, INC. [US/US]; 6421 Material Avenue, Rockford, IL 61132-2901 (US).		
(72) Inventors:	MARTIN, John, R. ; 5635 Nebeshonee Lane, Rockford, IL 61103 (US). TILLERY, Michael, L. ; 4919 Spring Brook Road, Rockford, IL 61111 (US). ZAM-MUTO, Samuel, N. ; 2308 24th Street, Rockford, IL 61108 (US).		

Published

With international search report

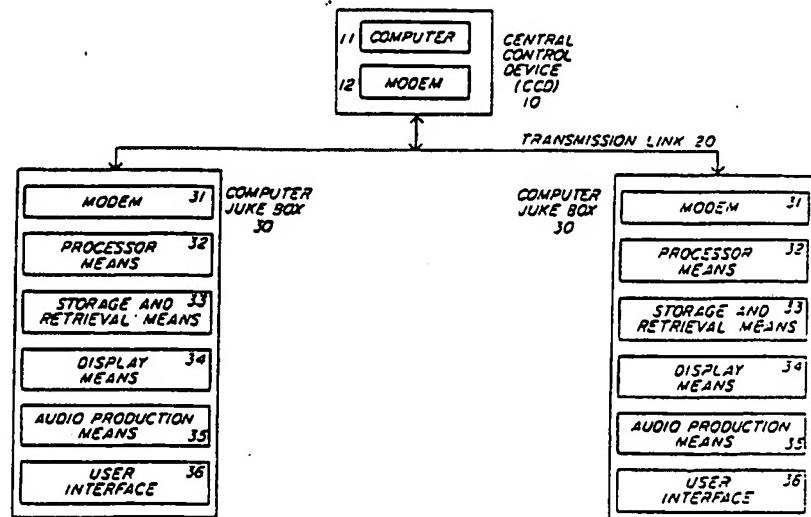
G 07 F 17/30. B  
G 07 F 17/16

DOC

(54) Title: SYSTEM FOR REMOTELY MANAGING A PLURALITY OF COMPUTER JUKEBOXES AT DIFFERENT LOCATIONS FROM A CENTRALIZED LOCATION

## (57) Abstract

A method and apparatus for managing a plurality of computer jukeboxes (30) at different locations, wherein a central control device (CCD) (10) communicates with each computer jukebox (30) via non-dedicated public telephone lines (20). Each computer jukebox (30) includes processor means (32) for controlling the computer jukebox (30), storage and retrieval means (33) for data, displays means (34) for selection menus, audio production means (35) for playing musical recordings, a converter for communicating via non-dedicated public telephone lines (20), and a user interface (36) enabling patrons to communicate with the processor means. The CCD (10) can be used to download musical recordings data to each computer jukebox (30), and each computer jukebox (30) can upload usage data to the CCD (10). The present invention allows for an elimination of routemen usually required to update jukebox recordings and obtain jukebox usage information. Communication between the CCD (10) and the computer jukebox (30) occurs during off-hours of establishments housing the computer jukeboxes (30), thus avoiding interference with the establishments' use of their own phone lines. As an alternative, routemen may physically visit each computer jukebox (30) to load new musical recordings into the memory of each computer jukebox (30) and obtain the computer jukebox usage data from each computer jukebox (30).



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	ES	Spain	MG	Madagascar
AU	Australia	FI	Finland	ML	Mali
BB	Barbados	FR	France	MN	Mongolia
BE	Belgium	GA	Gabon	MR	Mauritania
BF	Burkina Faso	GB	United Kingdom	MW	Malawi
BG	Bulgaria	CN	Guinea	NL	Netherlands
BJ	Benin	GR	Greece	NO	Norway
BR	Brazil	HU	Hungary	PL	Poland
CA	Canada	IT	Italy	RO	Romania
CF	Central African Republic	JP	Japan	SD	Sudan
CC	Congo	KP	Democratic People's Republic of Korea	SE	Sweden
CH	Switzerland	KR	Republic of Korea	SN	Senegal
CI	Côte d'Ivoire	LI	Liechtenstein	SU	Soviet Union
CM	Cameroon	LK	Sri Lanka	TD	Chad
CS	Czechoslovakia	LU	Luxembourg	TC	Togo
DE	Germany	MC	Monaco	US	United States of America
DK	Denmark				

1

System for Remotely Managing a Plurality of Computer Jukeboxes at Different Locations from a Centralized Location.

FIELD OF THE INVENTION

5

The present invention relates generally to managing entertainment machines, and more particularly to operating jukeboxes.

10

BACKGROUND OF THE INVENTION

Heretofore, an assortment of musical recordings found in a jukebox consists of a plurality of records, each record containing a specific recording.

Traditionally, these records are grooved phonograph 15 records. After a patron makes a selection, the selected phonograph record is mechanically removed from a storage rack within the jukebox, and the phonograph record is placed upon a rotating platform.

A stylus which is connected to a speaker system is 20 then placed upon the rotating phonograph record, resulting in the phonograph record being played by the jukebox. For each selection, a separate phonograph record must be removed from the storage rack in order to be played by the jukebox.

25 Conventional jukeboxes have also implemented compact disks as means for creating an assortment of musical recordings. Compact disks provide the improved sound quality made possible by digital

**SUBSTITUTE SHEET**

recordings. The same technique, however, is used to play compact disks. A separate compact disk corresponding to each selection must be removed from a storage rack in order for the jukebox to play the 5 selection.

Updating conventional jukeboxes is a costly and time consuming task. Routemen must periodically travel to each jukebox location and replace the existing recordings of each jukebox with up-to-date 10 recordings. The existing recordings are no longer used by the jukebox once removed, thus making the conventional method wasteful.

Routemen must also travel to each jukebox location to keep a tally of the number of times each 15 musical recording is selected in order to determine royalty fees. It is known to provide a jukebox with a counter that keeps track of the number of times each musical recording is selected, but routemen must still travel to each jukebox location to obtain this 20 information. Such a process requires an excessive number of people to visit each jukebox location periodically and visually read the information off the counter within each jukebox. Since the number of 25 jukeboxes in operation is quite large, the employment of routemen to obtain such data involves a

considerable expense. Furthermore, the ever changing nature of the recording industry requires that such data be gathered frequently in order to keep abreast of a continually changing market.

OBJECTS AND SUMMARY OF THE INVENTION

Accordingly, it is a primary object of the present invention to provide a method and apparatus for managing a plurality of computer jukeboxes which 10 is capable of eliminating the necessity for routemen to change records in the jukeboxes. The computer jukeboxes store recordings in memory, thus enabling routemen to simply load new recordings into the memory of each computer jukebox.

Another object of the present invention is to eliminate a necessity for routemen by enabling new recordings and selection menus to be downloaded to each computer jukebox via a transmission link. In that regard, it is an object of the present invention 20 to provide a method and apparatus which eliminates the material waste usually associated with updating jukeboxes. Instead of throwing away old recordings and replacing them with new ones, as is the conventional procedure, the present invention 25 eliminates this waste by enabling new recordings to

simply be downloaded into the memory of each computer jukebox. The old recordings are simply erased, if necessary.

Another object of the present invention is to provide a method and apparatus which is capable of remotely obtaining jukebox usage data, thus eliminating a necessity for routemen to do this task. The present invention utilizes a computer jukebox, which as part of its software programming, stores the number of times each musical recording is played and the number of credits that have been awarded. This data is uploaded to a central control device via a transmission link.

An additional object of the present invention is to provide a method and apparatus utilizing modern computer technology to digitally store and play musical recordings. The jukebox of the present invention is basically a computer having a sophisticated audio production capability.

A further object of the present invention is to provide a method and apparatus capable of being used with the remote management of jukeboxes via public telephone lines without interfering with establishments' use of their own phone lines. A central control device may only communicate with the

jukeboxes during off-hours of the establishments in which the computer jukeboxes are located, thus avoiding interference with the establishments' use of their phone lines during working hours.

5 Other objects, features and advantages of the present invention will be readily apparent from the following description of certain preferred embodiments thereof taken in conjunction with the accompanying drawing, although variations and modifications may be  
10 effected without departing from the spirit and scope of the novel concepts of the disclosure.

BRIEF DESCRIPTION OF THE DRAWING

The figure is a block diagram of the preferred  
15 embodiment of the present invention illustrating two different locations with a computer jukebox at each location. The block diagram, however, is intended to depict that a plurality of different locations can be connected to a transmission link.

20 While the invention will be described in connection with the preferred embodiment, there is no intent to limit it to that embodiment. On the contrary, the intent is to cover all its alternatives, modifications and equivalents included within the

**SUBSTITUTE SHEET**

spirit and scope of the invention as defined by the claims.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

5       Turning now to the drawing, the figure is a block diagram of the preferred embodiment of the present invention. A central control device (CCD) 10 is located remotely from a plurality of computer jukeboxes 30. The CCD 10 is comprised of a computer 10 11 including a modem 12.

The CCD 10 maintains communication with each computer jukebox 30 via a transmission link 20. In the preferred embodiment, the transmission link 20 is a conveniently existing cable system such as the lines 15 of a public or private telephone system or the like.

Both the modem 12 of the CCD 10 and a modem 31 of each computer jukebox enable communication to occur via the transmission link 20. The modems convert the signals of the computers into signals that can be transmitted 20 over the transmission link 20. The modems also convert transmission link signals into signals the computers can understand.

Each computer jukebox 30 includes a modem 31, processor means 32, storage and retrieval means 33, 25 display means 34, audio production means 35, and a

**SUBSTITUTE SHEET**

user interface 36. The computer jukebox 30 is  
basically a computer having a sophisticated audio  
production capability.

The processor means 32 include a microprocessor  
5 which substantially controls the computer jukebox 30.

The software program that directs the computer jukebox  
30 is stored in the storage and retrieval means 33.

The storage and retrieval means 33 include a ROM and  
an additional large-volume data storage means. The  
10 software for the computer jukebox 30 is stored in the  
ROM. Musical recording data and computer jukebox  
usage data is stored in the large-volume data storage  
means. The large-volume data storage means can  
include any of the presently available large-volume  
15 storage devices used by computers.

The display means 34 provide patrons with  
selection menus from which they can choose recordings  
to be played by the computer jukebox 30. The display  
means 34 in the preferred embodiment are a video  
20 monitor. The selection menus are stored in the large-  
volume storage means.

The audio production means 35 enable the  
digitally stored musical recording to be played by the  
computer jukebox 30. The audio production means 35  
25 include a sophisticated speaker system in combination

**SUBSTITUTE SHEET**

with a converter capable of producing audio music from digitally stored recordings.

The user interface 36 enables patrons to communicate with the processor means 32. In the 5 preferred embodiment the user interface includes a coin slot mechanism, musical recording selectors, and the like.

In the preferred embodiment, the CCD 10 periodically communicates with each computer jukebox 10 30 via the transmission link 20. During this communication, the CCD 10 digitally downloads new musical recording data to each computer jukebox 30. The musical recording data includes both musical recordings and new selection menus. Each computer 15 jukebox 30 stores received musical recording data in its large-volume storage means. Depending upon the type of large-volume storage means used, a computer jukebox 30 may erase preexisting musical recording 20 data to free the necessary memory required to store the new musical recording data.

Also during communication between the CCD 10 and a computer jukebox 30, the computer jukebox 30 digitally uploads computer jukebox usage data to the CCD 10. Computer jukebox usage data includes the 25 number of times a computer jukebox 30 has been used

**SUBSTITUTE SHEET**

(i.e., the number of awarded credits) and the number of times each specific musical recording has been played. This data enables the CCD 10 to determine how much money a computer jukebox 30 has received and the 5 royalty fees for each musical recording.

The CCD 10 is programmed to communicate with computer jukeboxes 30 during respective off-hours of each establishment housing a computer jukebox 30. This period of time usually occurs when an 10 establishment is closed. The CCD 10 communicates with the computer jukeboxes 30 during the off-hours so that the transfer of data avoids interfering with the ability of each establishment to use their own phone lines. Furthermore, since the CCD 10 is designed to 15 communicate with the computer jukeboxes 30 during the off-hours, the present invention does not require the use of dedicated phone lines as a transmission link 20.

While the present invention is being described 20 and illustrated in accordance with the preferred embodiment enabling new recordings and computer usage data to be transferred via a transmission link 20, the new recordings and computer usage data may be manually transferred by routemen who physically visit each 25 computer jukebox location. In this embodiment,

10

routemen manually load new recordings into the memory of each computer jukebox 30 and read the computer usage data from each computer jukebox 30. Routemen may simply load the new recordings into the large 5 volume storage means of each computer jukebox 30, or even replace a disposable high density storage medium if the computer jukeboxes 30 utilize such a feature. Such an embodiment still enjoys the advantages made possible by the computer jukeboxes 30.

10

**SUBSTITUTE SHEET**

We claim as our invention:

1. A method of managing a plurality of computer jukeboxes, comprising in combination:

providing a plurality of computer jukeboxes,  
5 each computer jukebox including processor means for controlling the computer jukebox, storage and retrieval means for data, display means for selection menus, audio production means for playing recordings, and a user interface enabling patrons to communicate  
10 with the processor means; and

updating each computer jukebox's library of musical recordings by loading new musical recordings into the storage and retrieval means of each computer jukebox.

15 2. The method of managing a plurality of computer jukeboxes as defined in claim 1, further comprising:

providing a plurality of computer jukeboxes at different locations, each computer jukebox  
20 including a converter for communicating via a transmission link;

providing a central control device (CCD), wherein the CCD is a computer including a converter;  
connecting the plurality of computer  
25 jukeboxes via the transmission link to the CCD; and

**SUBSTITUTE SHEET**

communicating data between the CCD and the plurality of computer jukeboxes at different locations via the transmission link.

5       3. The method of managing a plurality of computer jukeboxes at different locations as defined in claim 2, wherein the communicating data includes downloading musical recording data from the CCD to each computer jukebox.

10

4. The method of managing a plurality of computer jukeboxes at different locations as defined in claim 2, wherein the communicating data includes uploading computer jukebox usage data from each 15 computer jukebox to the CCD.

5. The method of managing a plurality of computer jukeboxes at different locations as defined in claim 2, wherein the communicating data includes 20 selection menus that are presented on the display means whereby the patrons choose recordings to be played by the computer jukeboxes.

6. The method of managing a plurality of 25 computer jukeboxes at different locations as defined

**SUBSTITUTE SHEET**

13

in claim 2, wherein the communicating data is stored and transferred digitally.

7. The method of managing a plurality of computer jukeboxes at different locations as defined in claim 2, wherein the communicating data includes number of credits awarded to the computer jukebox and number of times each musical recording has been played by the computer jukebox.

10

8. The method of managing a plurality of computer jukeboxes at different locations as defined in claim 2, wherein the transmission link is non-dedicated public telephone lines.

15

9. The method of managing a plurality of computer jukeboxes at different locations as defined in claim 8, wherein the converters are modems.

20

10. The method of managing a plurality of computer jukeboxes at different locations as defined in claim 9, wherein software controlling the CCD directs the CCD to communicate with each computer jukebox during off-hours of establishments in which the computer jukeboxes are located, whereby

**SUBSTITUTE SHEET**

communicating data during the off-hours avoids interference with the establishments' use of their own phone lines.

- 5        11. A system for managing a plurality of computer jukeboxes, comprising:

              said computer jukeboxes including processor means for substantially controlling the computer jukeboxes, storage and retrieval means for data, 10 display means for selection menus, audio production means for playing recordings, and a user interface enabling patrons to communicate with the processor means; and

              loading musical recording data into the 15 storage and retrieval means for data of each computer jukebox.

12. A system for managing a plurality of computer jukeboxes as defined in claim 11, further 20 comprising:

              said plurality of computer jukeboxes are at different remote locations and the computer jukeboxes further include converters for communicating via a transmission link;

15

a central control device (CCD), wherein the  
CCD is a computer including a converter; and  
said transmission link enabling the CCD and  
the plurality of computer jukeboxes to communicate  
5 data to each other.

13. The system for managing a plurality of  
computer jukeboxes at different locations as defined  
in claim 12, wherein communicated data includes  
10 musical recording data which is downloaded from the  
CCD to each computer jukebox..

14. The system for managing a plurality of  
computer jukeboxes at different locations as defined  
15 in claim 12, wherein communicated data includes  
computer jukebox usage data which is uploaded from  
each computer jukebox to the CCD.

15. The system for managing a plurality of  
20 computer jukeboxes at different locations as defined  
in claim 12, wherein communicated data includes  
selection menus that are presented on the display  
means whereby the patrons choose recordings to be  
played by the computer jukebox.

25

**SUBSTITUTE SHEET**

16. The system for managing a plurality of computer jukeboxes at different locations as defined in claim 12, wherein communicated data is stored and transferred digitally.

5

17. The system for managing a plurality of computer jukeboxes located at different locations as defined in claim 12, wherein communicated data includes:

10           number of credits awarded to a computer jukebox; and

               number of times each musical recording has been played by a computer jukebox.

15           18. The system for managing a plurality of computer jukeboxes at different locations as defined in claim 12, wherein the transmission link is non-dedicated public telephone lines.

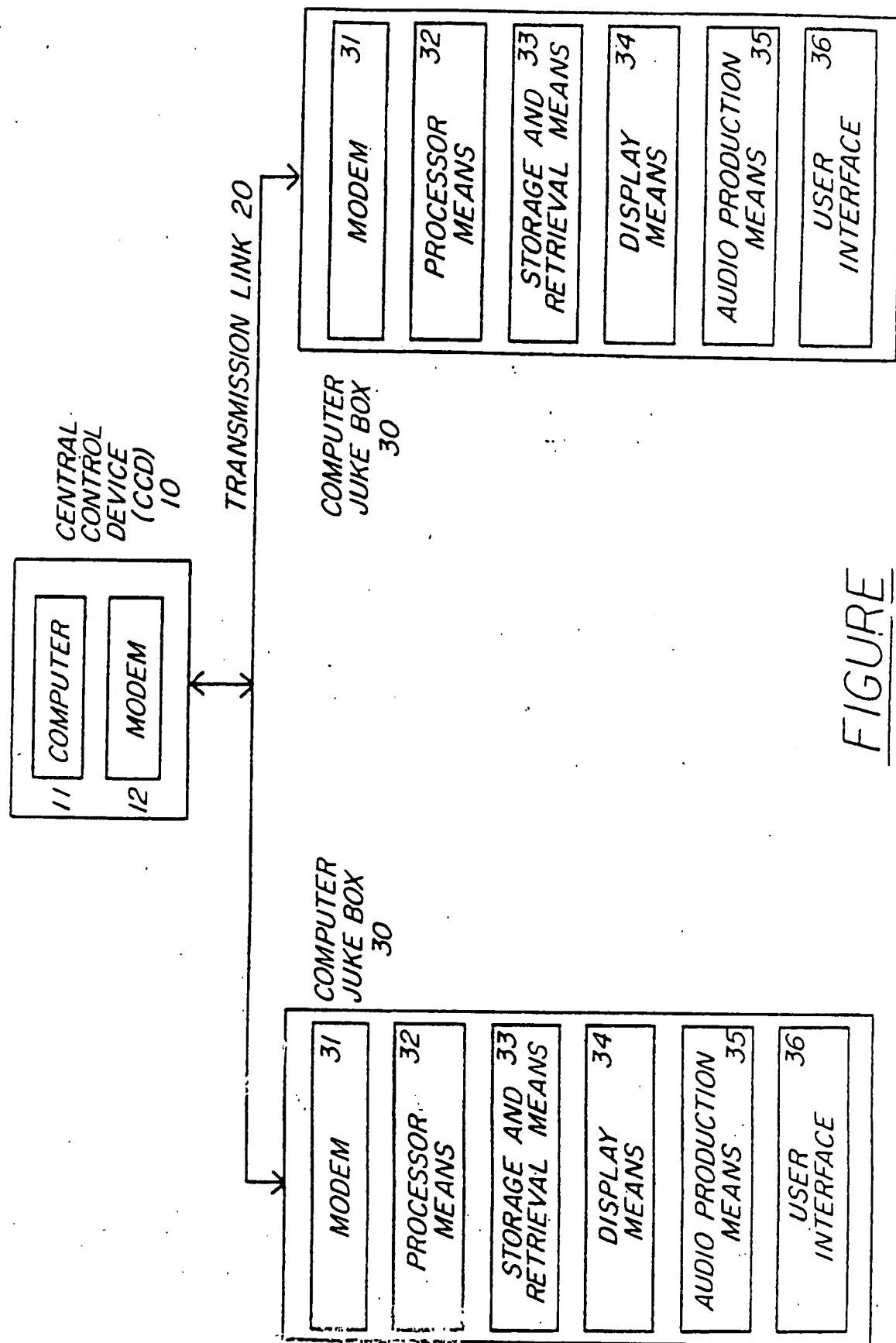
20           19. The system for managing a plurality of computer jukeboxes at different locations as defined in claim 18, wherein the converters are modems.

25           20. The system for managing a plurality of computer jukeboxes at different locations as defined

**SUBSTITUTE SHEET**

in claim 19, wherein software controlling the CCD directs the CCD to communicate with each computer jukebox during off-hours of establishments in which the computer jukeboxes are located, and whereby  
5 communicating data during the off-hours avoids interference with the establishments' use of their own phone lines.

**SUBSTITUTE SHEET**



# BEST AVAILABLE COPY

## INTERNATIONAL SEARCH REPORT

International Application No. PCT/US91/03925

### I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) \*

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC(5) G11B 31/00

### II. FIELDS SEARCHED

Minimum Documentation Searched ?

Classification System	Classification Symbols
U.S. CL.	3 69/15,84,85,29,30,69.92 364/478,479,410:84/25, DIG 2, DIG 6

Documentation Searched other than Minimum Documentation  
to the Extent that such Documents are Included in the Fields Searched \*

### III. DOCUMENTS CONSIDERED TO BE RELEVANT \*

Category *	Citation of Document, ** with indication, where appropriate, of the relevant passages ***	Relevant to Claim No. ***
Y	US, A, 4,335,809 (WAIN) 22 JUNE 1982 (SEE COLUMN 5 LINE 21-COLUMN 6 LINE 62, FIGURE 1 AND COLUMN 2 LINES 22-50)	1-20
Y	US, A, 4,232,295 (McCONNELL) 04 NOVEMBER 1980 (SEE FIGURE 1)	1-20
Y	GB, A, 2,170,943 (TODD) 13 AUGUST 1936 (SEE COLUMN 1 LINE 6 COLUMN 2 LINE 28)	1-20
Y,P	US, A, 4,937,807 (WEITZ) 26 JUNE 1990 (SEE SUMMARY OF INVENTORY, COLUMN 7 LINES 28-58 AND COLUMN 1 LINE 52, COLUMN 2 LINE 4)	1-20
Y	US, A, 4,811,325 (SHARPLES) 07 MARCH 1989 (SEE COLUMN 9 LINE 36-COLUMN 10 LINE 41)	1-20

\* Special categories of cited documents: \*\*

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

### IV. CERTIFICATION

Date of the Actual Completion of the International Search

05 JULY 1991

Date of Mailing of this International Search Report

01 OCT 1991

International Searching Authority

ISA/US

Signature of Authorized Officer

Nguyen  
GAIL O. HAYES  
INTERNATIONAL DIVISION